

Co-op Student Competencies

UPEI Co-operative Education students possess a variety of skills sets, experiences and educational backgrounds. The table below outlines the competencies and core courses for each program area:

	Business	Computer Science	Mathematics	Physics
Competencies	<ul style="list-style-type: none"> critical thinking and problem-solving technological applications in business teamwork/personal initiative communication skills and leadership quantitative analysis integrating the core business functions ethical, social, historical, and global awareness business research 	<ul style="list-style-type: none"> critical thinking and problem solving team work/personal initiative communication skills <p><i>Students conducting their first work term:</i></p> <ul style="list-style-type: none"> programming in an object-oriented language (Java) some experience in procedural (C) and functional (e.g., LISP) languages data structures digital systems (binary, Boolean logic, gate-level components, etc.) computer organization and architecture UNIX-like operating systems (commands, utilities, programming) mathematics (calculus, linear algebra, statistics) <p><i>Students completing their third and fourth work terms:</i></p> <ul style="list-style-type: none"> analysis and design of algorithms operating systems 	<ul style="list-style-type: none"> critical thinking and problem solving teamwork/personal initiative basic competency in Calculus, Linear Algebra and Statistics basic programming in Java communications skills, especially: ability to communicate/present verbally and ability to write technical reports <p><i>For first work term (Actuarial Science):</i></p> <ul style="list-style-type: none"> knowledge of GGY Axis software package Mathematics of Finance Finance and Investments <p><i>For first work term (Analytics):</i></p> <ul style="list-style-type: none"> knowledge of MATLAB software package <p><i>For first work term (Financial Mathematics):</i></p> <ul style="list-style-type: none"> knowledge of MATLAB software package Mathematics of Finance 	<ul style="list-style-type: none"> understanding of fundamental physical principles that govern our world problem-solving and analytical skills that are applicable in all areas of life and science excellent communications skills, both written and oral good teamwork and leadership skills technical expertise

	Business	Computer Science	Mathematics	Physics
		(internals) <ul style="list-style-type: none"> • computer communication and networks • database management systems • theory of computing • object-oriented design patterns • software architecture • software engineering <i>Depending on the student's goals/specialization:</i> <ul style="list-style-type: none"> • web programming • computer graphics • programming for mobile devices • bioinformatics • video game programming • embedded systems • artificial intelligence • cloud computing • machine learning and data mining • data science • human computer interfaces • wireless sensor networks 	<ul style="list-style-type: none"> • -Finance and Investments <i>For first work term (Statistics):</i> <ul style="list-style-type: none"> • knowledge of R and/or SAS software package • Regression Analysis <i>For first work term (Mathematics):</i> <ul style="list-style-type: none"> • knowledge of MAPLE software package <i>For later work terms:</i> <ul style="list-style-type: none"> • More completed courses and specialized knowledge in their area of specialization 	
Core courses	<ul style="list-style-type: none"> • Accounting • Finance • Marketing • Entrepreneurship • Business Research • Management Science • Information Technology • Professional Writing 	<ul style="list-style-type: none"> • Digital Systems • Computer Organization and Architecture • Data Structures and Algorithms • Comparative Programming Languages • Programming Practices • Theory of Computing 	<ul style="list-style-type: none"> • Calculus I, II, III • Linear Algebra I and II • Statistics I, II • Intro Computer Science • Mathematical Reasoning • Combinatorics I • Plus numerous specialized courses in either: 	<ul style="list-style-type: none"> • General Physics I & II • Mechanics • Modern Physics • Electricity and Magnetism • Electronics and Instrumentation • Mathematical Physics • Statistical Physics I & II • Quantum Mechanics I & II

	Business	Computer Science	Mathematics	Physics
	<ul style="list-style-type: none"> • Organizational Behaviour • Strategic Management • Human Resource Management • Operations Management 	<ul style="list-style-type: none"> • Computer Communications • Database Systems • Operating Systems • Analysis and Design of Algorithms • Software Design and Architecture • Software Engineering • Software Systems or Prototype Systems Development • Professional Communication and Practice 	<ul style="list-style-type: none"> • Mathematics • Actuarial Science • Financial Mathematics • Statistics • Data Analytics • Business Analytics 	<ul style="list-style-type: none"> • Experimental Physics